Complete Summary

GUIDELINE TITLE

Screening for elevated blood lead levels in children and pregnant women: recommendation statement.

BIBLIOGRAPHIC SOURCE(S)

U.S. Preventive Services Task Force (USPSTF). Screening for elevated blood lead levels in children and pregnant women: recommendation statement. Rockville (MD): Agency for Healthcare Research and Quality (AHRQ); 2006 Dec. 12 p. [15 references]

GUIDELINE STATUS

This is the current release of the guideline.

It updates a previously published guideline summary: U.S. Preventive Services Task Force. Guide to clinical preventive services. 2nd ed. Baltimore (MD): Williams & Wilkins; 1996. Chapter 23, Screening for elevated lead levels in childhood and pregnancy. p. 247-67.

COMPLETE SUMMARY CONTENT

SCOPE

DISEASE/CONDITION(S)

Elevated blood lead levels (i.e., ≥10 micrograms/dL)

GUIDELINE CATEGORY

Prevention
Screening

CLINICAL SPECIALTY

Family Practice
Internal Medicine
Obstetrics and Gynecology
Pediatrics
Preventive Medicine

INTENDED USERS

Advanced Practice Nurses
Allied Health Personnel
Health Care Providers
Nurses
Physician Assistants
Physicians

GUIDELINE OBJECTIVE(S)

To summarize the U.S. Preventive Services Task Force recommendations for screening for elevated blood lead levels in children and pregnant women, and the supporting focused evidence review

TARGET POPULATION

- Asymptomatic children (aged 1 to 5 years) at increased and average risk for elevated blood lead levels and lead toxicity
- Asymptomatic pregnant women

INTERVENTIONS AND PRACTICES CONSIDERED

Note: The following were considered but not recommended.

Routine screening for elevated blood lead levels using:

- Blood tests
- Questionnaires

MAJOR OUTCOMES CONSIDERED

- **Key Question 1**:

  Children: Is there direct evidence that screening for lead results in improved health outcomes (i.e., cognitive changes, behavioral problems, learning disorders)?

  Pregnant Women: Is there direct evidence that screening in asymptomatic pregnant women for lead results in improved health outcomes (i.e., cognitive changes in offspring, perinatal outcomes including birth weight/preterm delivery, etc., maternal blood pressure)?

- **Key Question 2**:

  Children: What is the prevalence of elevated lead in children? Are there population-level risk factors that identify children at higher risk for elevated lead levels (i.e., geography, race/ethnicity, socioeconomic status, age)?

  Pregnant Women: What is the prevalence of elevated lead in asymptomatic pregnant women? Are there population-level risk factors that identify pregnant women at higher risk for elevated lead levels (i.e., geography, race/ethnicity, socioeconomic status, age)?

- **Key Question 3**:

  Children: Can screening tests accurately detect elevated blood levels? What is the accuracy of using questionnaires (or other tools) for risk factor assessment at various blood levels? What is the optimal frequency for screening? What is the optimal frequency for repeat testing?

  Pregnant Women: Can screening tests accurately detect elevated blood levels? What is the accuracy of using questionnaires (or other tools) for risk factor assessment at various blood levels?

- **Key Question 4**: What are the adverse effects of screening?
- **Key Question 5**: Do interventions (i.e., counseling families to reduce lead exposure, nutritional interventions, residential lead hazard control techniques, chelation therapy) for elevated lead levels result in improved health outcomes?
- **Key Question 6**: What are the adverse effects of interventions?
- **Key Question 7**: What are cost effectiveness issues?

METHODOLOGY

METHODS USED TO COLLECT/SELECT EVIDENCE

Hand-searches of Published Literature (Primary Sources)
Hand-searches of Published Literature (Secondary Sources)
Searches of Electronic Databases

DESCRIPTION OF METHODS USED TO COLLECT/SELECT THE EVIDENCE

Note from the National Guideline Clearinghouse (NGC): A focused systematic review of the literature was prepared by the Oregon Evidence-based Practice Center (EPC) and Oregon Health & Science University for the Agency for Healthcare Research and Quality (AHRQ) for use by the U.S. Preventive Services Task Force (USPSTF) (see the "Availability of Companion Documents" field).

Literature Search Strategy

EPC personnel searched MEDLINE, reference lists of review articles, and tables of contents of leading pediatric journals for studies published in 1995 or later that

contained new information about the prevalence, diagnosis, natural course, or treatment of elevated lead levels in children ages 1 to 5 and in pregnant women.

Inclusion/Exclusion Criteria

Articles that met the following criteria were included in this update:

1. The study was an original meta-analysis, prospective cohort study, controlled trial, quasi-experimental study with concurrent controls, or case-control study; not a case series, case report, or comparison with historical controls.
2. The study was not included in the 1996 review.
3. The study was rated as at least "fair-quality" using the USPSTF criteria for internal validity.

NUMBER OF SOURCE DOCUMENTS

Not stated

METHODS USED TO ASSESS THE QUALITY AND STRENGTH OF THE EVIDENCE

Weighting According to a Rating Scheme (Scheme Given)

RATING SCHEME FOR THE STRENGTH OF THE EVIDENCE

The U.S. Preventive Services Task Force grades the **quality of the overall evidence** for a service on a 3-point scale (good, fair, poor):

Good

Evidence includes consistent results from well-designed, well-conducted studies in representative populations that directly assess effects on health outcomes.

Fair

Evidence is sufficient to determine effects on health outcomes, but the strength of the evidence is limited by the number, quality, or consistency of the individual studies, generalizability to routine practice, or indirect nature of the evidence on health outcomes.

Poor

Evidence is insufficient to assess the effects on health outcomes because of limited number or power of studies, important flaws in their design or conduct, gaps in the chain of evidence, or lack of information on important health outcomes.

METHODS USED TO ANALYZE THE EVIDENCE

Review of Published Meta-Analyses
Systematic Review with Evidence Tables

DESCRIPTION OF THE METHODS USED TO ANALYZE THE EVIDENCE

Note from the National Guideline Clearinghouse (NGC): A focused systematic review of the literature was prepared by the Oregon Evidence-based Practice Center (EPC) and Oregon Health & Science University for the Agency for Healthcare Research and Quality (AHRQ) for use by the U.S. Preventive Services Task Force (USPSTF) (see the "Availability of Companion Documents" field).

Synthesis

For the critical key questions only (see below), the EPC used standard USPSTF methods to abstract information about the design, results, and internal validity of each study, and included only those studies they rated fair-quality or better. The populations of asymptomatic children and pregnant women were reviewed separately.

Members of the USPSTF and AHRQ identified Key Questions 1 and 5 (for both children and pregnant women; see "Major Outcomes Considered" field) as critical key questions. The EPC therefore updated Key Questions 1 and 5 using standard systematic review procedures. They conducted a selected review of the literature that addressed Key Questions 2 to 4, 6. Key Question 7 was not examined because of a lack of evidence of improved clinical outcomes for Key Question 5.

METHODS USED TO FORMULATE THE RECOMMENDATIONS

Balance Sheets
Expert Consensus

DESCRIPTION OF METHODS USED TO FORMULATE THE RECOMMENDATIONS

When the overall quality of the evidence is judged to be good or fair, the U.S. Preventive Services Task Force (USPSTF) proceeds to consider the magnitude of net benefit to be expected from implementation of the preventive service. Determining net benefit requires assessing both the magnitude of benefits and the magnitude of harms and weighing the two.

The USPSTF classifies benefits, harms, and net benefits on a 4-point scale: "substantial," "moderate," "small," and "zero/negative."

"Outcomes tables" (similar to "balance sheets") are the USPSTF's standard resource for estimating the magnitude of benefit. These tables, prepared by the topic teams for use at USPSTF meetings, compare the condition specific outcomes expected for a hypothetical primary care population with and without use of the preventive service. These comparisons may be extended to consider only people of specified age or risk groups or other aspects of implementation. Thus, outcomes tables allow the USPSTF to examine directly how the preventive service affects benefits for various groups.

When evidence on harms is available, the topic teams assess its quality in a manner like that for benefits and include adverse events in the outcomes tables. When few harms data are available, the USPSTF does not assume that harms are small or nonexistent. It recognizes a responsibility to consider which harms are likely and judge their potential frequency and the severity that might ensue from implementing the service. It uses whatever evidence exists to construct a general confidence interval on the 4-point scale (e.g., substantial, moderate, small, and zero/negative).

Value judgments are involved in using the information in an outcomes table to rate either benefits or harms on the USPSTF's 4-point scale. Value judgments are also needed to weigh benefits against harms to arrive at a rating of net benefit.

In making its determinations of net benefit, the USPSTF strives to consider what it believes are the general values of most people. It does this with greater confidence for certain outcomes (e.g., death) about which there is little disagreement about undesirability, but it recognizes that the degree of risk people are willing to accept to avert other outcomes (e.g., cataracts) can vary considerably. When the USPSTF perceives that preferences among individuals vary greatly, and that these variations are sufficient to make the trade-off of benefits and harms a "close-call," then it will often assign a C recommendation (see the "Recommendation Rating Scheme" field). This recommendation indicates the decision is likely to be sensitive to individual patient preferences.

The USPSTF uses its assessment of the evidence and magnitude of net benefit to make recommendations. The general principles the USPSTF follows in making recommendations are outlined in Table 5 of the companion document cited below. The USPSTF liaisons on the topic team compose the first drafts of the recommendations and rationale statements, which the full panel then reviews and edits. Recommendations are based on formal voting procedures that include explicit rules for determining the views of the majority.

From: Harris RP, Helfand M, Woolf SH, Lohr KN, Mulrow, CD, Teutsch SM, Atkins D. Current methods of the U.S. Preventive Services Task Force: a review of the process. Methods Work Group, Third U.S. Preventive Services Task Force. Am J Prev Med 2001 Apr;20(3S):21-35.

RATING SCHEME FOR THE STRENGTH OF THE RECOMMENDATIONS

The U.S. Preventive Services Task Force (USPSTF) grades its **recommendations** according to one of five classifications (A, B, C, D, I) reflecting the strength of evidence and magnitude of net benefit (benefits minus harms):

A

The USPSTF strongly recommends that clinicians provide [the service] to eligible patients. The USPSTF found good evidence that [the service] improves important health outcomes and concludes that benefits substantially outweigh harms.

B

The USPSTF recommends that clinicians provide [this service] to eligible patients. The USPSTF found at least fair evidence that [the service] improves important health outcomes and concludes that benefits outweigh harms.

C

The USPSTF makes no recommendation for or against routine provision of [the service]. The USPSTF found at least fair evidence that [the service] can improve health outcomes but concludes that the balance of benefits and harms is too close to justify a general recommendation.

D

The USPSTF recommends against routinely providing [the service] to asymptomatic patients. The USPSTF found at least fair evidence that [the service] is ineffective or that harms outweigh benefits.

I

The USPSTF concludes that the evidence is insufficient to recommend for or against routinely providing [the service]. Evidence that [the service] is effective is lacking, of poor quality, or conflicting, and the balance of benefits and harms cannot be determined.

COST ANALYSIS

A formal cost analysis was not performed and published costs analyses were not reviewed.

METHOD OF GUIDELINE VALIDATION

Comparison with Guidelines from Other Groups
External Peer Review
Internal Peer Review

DESCRIPTION OF METHOD OF GUIDELINE VALIDATION

Peer Review. Before the U.S. Preventive Services Task Force makes its final determinations about recommendations on a given preventive service, the Evidence-based Practice Center and the Agency for Healthcare Research and Quality send a draft systematic evidence review to 4 to 6 external experts and to federal agencies and professional and disease-based health organizations with interests in the topic. They ask the experts to examine the review critically for accuracy and completeness and to respond to a series of specific questions about the document. After assembling these external review comments and documenting the proposed response to key comments, the topic team presents this information to the Task Force in memo form. In this way, the Task Force can consider these external comments and a final version of the systematic review before it votes on its recommendations about the service. Draft recommendations are then circulated for comment from reviewers representing professional societies, voluntary organizations, and Federal agencies. These comments are

discussed before the whole U.S. Preventive Services Task Force before final recommendations are confirmed.

Recommendations of Others. Recommendations regarding screening for elevated lead levels from the following groups were discussed: The Centers for Disease Control and Prevention (CDC); the American College of Preventive Medicine; the American Academy of Pediatrics (AAP), the American Academy of Family Physicians, and Medicaid's Early and Periodic Screening, Diagnostic, and Treatment Program.

RECOMMENDATIONS

MAJOR RECOMMENDATIONS

Note from the U.S. Preventive Services Task Force (USPSTF): The USPSTF is redesigning its recommendation statement in response to feedback from primary care clinicians. The USPSTF plans to release, early in 2007, a new, updated recommendation statement that is easier to read and incorporates advances in USPSTF methodology. The recommendation statement below is an interim version that combines existing language and elements with a new format. Although the definitions of grades remain the same, other elements have been revised.

The USPSTF grades its recommendations (A, B, C, D, or I) and the quality of the overall evidence for a service (good, fair, poor). The definitions of these grades can be found at the end of the "Major Recommendations" field.

Summary of the Recommendations

Children

1. The USPSTF concludes that evidence is insufficient to recommend for or against routine screening for elevated blood lead levels in asymptomatic children aged 1 to 5 who are at increased risk. (**I recommendation**). (See "Clinical Considerations" for a discussion of risk.)
2. The USPSTF recommends against routine screening for elevated blood lead levels in asymptomatic children aged 1 to 5 years who are at average risk (**D Recommendation**).

Pregnant Women

3. The USPSTF recommends against routine screening for elevated blood lead levels in asymptomatic pregnant women. (**D recommendation**).

Clinical Considerations

- This USPSTF recommendation addresses screening for elevated blood lead levels in children aged 1 to 5 years who are both at average and increased risk, and in asymptomatic pregnant women.
- The highest mean blood lead levels the U.S. occur in children aged 1 to 5 years (geometric mean 1.9 microgram/dL). Children under 5 years of age are

at greater risk for elevated blood lead levels and lead toxicity because of increased hand-to-mouth activity, increased lead absorption from the gastrointestinal tract, and the greater vulnerability of the developing central nervous system. Risk factors for increased blood lead levels in children and adults include minority race/ethnicity; urban residence; low income; low educational attainment; older (pre-1950) housing; recent or ongoing home renovation or remodeling; pica exposure; use of ethnic remedies, certain cosmetics, and exposure to lead-glazed pottery; occupational and para-occupational exposures; and recent immigration. Additional risk factors for pregnant women include alcohol use, smoking, pica, and recent immigration status.

- Blood lead levels in childhood, after peaking at about 2 years of age, decrease during short- and long-term follow-up without intervention. Most lead is stored in bone. High bone lead levels can be present with normal blood lead levels, so that blood lead levels often do not reflect the total amount of lead in the body. This could explain the lack of effect of blood lead level-lowering measures on reducing neurotoxic effects.
- Screening tests for elevated blood lead levels include free erythrocyte (or zinc) protoporphyrin levels and capillary or venous blood lead levels. Erythrocyte (or zinc) protoporphyrin is insensitive to modest elevations in blood lead levels and lacks specificity. Blood lead concentration is more sensitive than erythrocyte protoporphyrin for detecting modest lead exposure, but its accuracy, precision, and reliability can be affected by environmental lead contamination. Therefore, venous blood lead level testing is preferred to capillary sampling. Screening questionnaires may be of value in identifying children at risk for elevated blood lead levels but should be tailored for and validated in specific communities for clinical use.
- Treatment options in use for elevated blood lead levels include residential lead hazard-control efforts (i.e., counseling and education, dust or paint removal, and soil abatement), chelation, and nutritional interventions. In most settings, education and counseling are offered for children with blood lead levels from 10 to 20 micrograms /dL. Some experts have also recommended nutritional counseling for children with blood lead levels in this range. Residential lead hazard control is usually offered to children with blood lead levels $\geq$20 micrograms/dL, while chelation therapy is offered to children with blood lead levels $\geq$45 micrograms/dL.
- Community-based interventions for the primary prevention of lead exposure are likely to be more effective, and may be more cost-effective, than office-based screening, treatment, and counseling. Relocating children who do not yet have elevated blood lead levels but who live in settings with high lead exposure may be especially helpful. Community, regional, and national environmental lead hazard reduction efforts, such as reducing lead in industrial emissions, gasoline, and cans, have proven highly effective in reducing population blood lead levels.

Definitions:

Strength of Recommendations

The USPSTF grades its **recommendations** according to one of five classifications (A, B, C, D, I) reflecting the strength of evidence and magnitude of net benefit (benefits minus harms):

A

The USPSTF strongly recommends that clinicians provide [the service] to eligible patients. The USPSTF found good evidence that [the service] improves important health outcomes and concludes that benefits substantially outweigh harms.

B

The USPSTF recommends that clinicians provide [this service] to eligible patients. The USPSTF found at least fair evidence that [the service] improves important health outcomes and concludes that benefits outweigh harms.

C

The USPSTF makes no recommendation for or against routine provision of [the service]. The USPSTF found at least fair evidence that [the service] can improve health outcomes but concludes that the balance of benefits and harms is too close to justify a general recommendation.

D

The USPSTF recommends against routinely providing [the service] to asymptomatic patients. The USPSTF found at least fair evidence that [the service] is ineffective or that harms outweigh benefits.

I

The USPSTF concludes that the evidence is insufficient to recommend for or against routinely providing [the service]. Evidence that [the service] is effective is lacking, of poor quality, or conflicting, and the balance of benefits and harms cannot be determined.

Strength of Evidence

The USPSTF grades the **quality of the overall evidence** for a service on a 3-point scale (good, fair, poor):

Good

Evidence includes consistent results from well-designed, well-conducted studies in representative populations that directly assess effects on health outcomes.

Fair

Evidence is sufficient to determine effects on health outcomes, but the strength of the evidence is limited by the number, quality, or consistency of the individual studies, generalizability to routine practice, or indirect nature of the evidence on health outcomes.

Poor

Evidence is insufficient to assess the effects on health outcomes because of limited number or power of studies, important flaws in their design or conduct, gaps in the chain of evidence, or lack of information on important health outcomes.

CLINICAL ALGORITHM(S)

None provided

EVIDENCE SUPPORTING THE RECOMMENDATIONS

TYPE OF EVIDENCE SUPPORTING THE RECOMMENDATIONS

The type of evidence supporting the recommendations is identified in the "Major Recommendations" field.

BENEFITS/HARMS OF IMPLEMENTING THE GUIDELINE RECOMMENDATIONS

POTENTIAL BENEFITS

Benefits of Detection and Early Intervention

The U.S. Preventive Services Task Force (USPSTF) found good quality evidence that interventions do not result in sustained decreases in blood lead levels and found insufficient evidence (no studies) evaluating residential lead hazard control efforts (i.e., dust or paint removal, soil abatement, counseling, or education) or nutritional interventions for improving neurodevelopmental outcomes in children with mild to moderately elevated blood lead levels. The USPSTF found no evidence examining the effectiveness of screening or interventions in improving health outcomes in asymptomatic pregnant women. Given the low prevalence of elevated blood lead levels in children at average risk and asymptomatic pregnant women, the magnitude of potential benefit cannot be greater than small.

A theoretical benefit of screening is that identification may prevent lead poisoning of other individuals in a shared environment, but the magnitude of this theoretical benefit is uncertain.

POTENTIAL HARMS

Harms of Detection and Early Treatment

There is good quality evidence that chelation treatment in asymptomatic children does not improve neurodevelopmental outcomes and is associated with a slight diminution in cognitive performance. Chelation therapy may result in transient renal, hepatic, and other toxicity, mild gastrointestinal symptoms, sensitivity reactions, and rare life-threatening reactions. Residential lead-based paint and dust hazard control treatments may lead to acutely increased blood lead levels from improper removal techniques. Potential harms of screening are false-positive results, anxiety, inconvenience, work or school absenteeism, and financial costs

associated with repeated testing. Although the exact magnitude of these known and potential harms is uncertain, the overall magnitude is at least small.

No studies have directly addressed the harms of screening and interventions for pregnant women. Although there is little specific evidence concerning the potential harms of interventions for pregnant women with elevated blood lead levels, the magnitude of harms from such interventions is also at least small.

QUALIFYING STATEMENTS

QUALIFYING STATEMENTS

Recommendations made by the U.S. Preventive Services Task Force are independent of the U.S. government. They should not be construed as an official position of the Agency for Healthcare Research and Quality (AHRQ) or the U.S. Department of Health and Human Services.

IMPLEMENTATION OF THE GUIDELINE

DESCRIPTION OF IMPLEMENTATION STRATEGY

The experiences of the U.S. Preventive Services Task Force (USPSTF), as well as that of other evidence-based guideline efforts, have highlighted the importance of identifying effective ways to implement clinical recommendations. Practice guidelines are relatively weak tools for changing clinical practice when used in isolation. To effect change, guidelines must be coupled with strategies to improve their acceptance and feasibility. Such strategies include enlisting the support of local opinion leaders, using reminder systems for clinicians and patients, adopting standing orders, and audit and feedback of information to clinicians about their compliance with recommended practice.

In the case of preventive services guidelines, implementation needs to go beyond traditional dissemination and promotion efforts to recognize the added patient and clinician barriers that affect preventive care. These include clinicians' ambivalence about whether preventive medicine is part of their job, the psychological and practical challenges that patients face in changing behaviors, lack of access to health care or of insurance coverage for preventive services for some patients, competing pressures within the context of shorter office visits, and the lack of organized systems in most practices to ensure the delivery of recommended preventive care.

Dissemination strategies have changed dramatically in this age of electronic information. While recognizing the continuing value of journals and other print formats for dissemination, the Agency for Healthcare Research and Quality makes all U.S. Preventive Services Task Force (USPSTF) products available through its Web site. The combination of electronic access and extensive material in the public domain should make it easier for a broad audience of users to access U.S. Preventive Services Task Force materials and adapt them for their local needs. Online access to U.S. Preventive Services Task Force products also opens up new possibilities for the appearance of the annual, pocket-size *Guide to Clinical Preventive Services*. USPSTF recommendations also are available in an electronic

selector tool. The ePSS can be accessed on the Internet or downloaded to to a PDA.

To be successful, approaches for implementing prevention have to be tailored to the local level and deal with the specific barriers at a given site, typically requiring the redesign of systems of care. Such a systems approach to prevention has had notable success in established staff-model health maintenance organizations, by addressing organization of care, emphasizing a philosophy of prevention, and altering the training and incentives for clinicians. Staff-model plans also benefit from integrated information systems that can track the use of needed services and generate automatic reminders aimed at patients and clinicians, some of the most consistently successful interventions. Information systems remain a major challenge for individual clinicians' offices, however, as well as for looser affiliations of practices in network-model managed care and independent practice associations, where data on patient visits, referrals, and test results are not always centralized.

IMPLEMENTATION TOOLS

Foreign Language Translations
Patient Resources
Personal Digital Assistant (PDA) Downloads
Pocket Guide/Reference Cards
Tool Kits

For information about availability, see the "Availability of Companion Documents" and "Patient Resources" fields below.

INSTITUTE OF MEDICINE (IOM) NATIONAL HEALTHCARE QUALITY REPORT CATEGORIES

IOM CARE NEED

Staying Healthy

IOM DOMAIN

Effectiveness
Patient-centeredness

IDENTIFYING INFORMATION AND AVAILABILITY

BIBLIOGRAPHIC SOURCE(S)

U.S. Preventive Services Task Force (USPSTF). Screening for elevated blood lead levels in children and pregnant women: recommendation statement. Rockville (MD): Agency for Healthcare Research and Quality (AHRQ); 2006 Dec. 12 p. [15 references]

ADAPTATION

Not applicable: the guideline was not adapted from another source.

DATE RELEASED

1996 (revised 2006)

GUIDELINE DEVELOPER(S)

United States Preventive Services Task Force - Independent Expert Panel

GUIDELINE DEVELOPER COMMENT

The U.S. Preventive Services Task Force (USPSTF) is a federally-appointed panel of independent experts. Conclusions of the U.S. Preventive Services Task Force do not necessarily reflect policy of the U.S. Department of Health and Human Services (DHHS) or its agencies.

SOURCE(S) OF FUNDING

United States Government

GUIDELINE COMMITTEE

U.S. Preventive Services Task Force

COMPOSITION OF GROUP THAT AUTHORED THE GUIDELINE

Corresponding Author: Ned Calonge, MD, MPH, Chair, U.S. Preventive Services Task Force, c/o Program Director, USPSTF, Agency for Healthcare Research and Quality

*Task Force Members**: Ned Calonge, MD, MPH, Chair, USPSTF (Chief Medical Officer and State Epidemiologist, Colorado Department of Public Health and Environment, Denver, CO); Diana B. Petitti, MD, MPH , Vice-chair, USPSTF (Senior Scientific Advisor for Health Policy and Medicine, Regional Administration, Kaiser Permanente Southern California, Pasadena, CA); Thomas G. DeWitt, MD (Carl Weihl Professor of Pediatrics and Director of the Division of General and Community Pediatrics, Department of Pediatrics, Children's Hospital Medical Center, Cincinnati, OH); Leon Gordis, MD, MPH, DrPH (Professor, Epidemiology Department, Johns Hopkins Bloomberg School of Public Health, Baltimore, MD); Kimberly D. Gregory, MD, MPH (Director, Women's Health Services Research and Maternal-Fetal Medicine, Department of Obstetrics and Gynecology, Cedars-Sinai Medical Center, Los Angeles, CA); Russell Harris, MD, MPH (Professor of Medicine, Sheps Center for Health Services Research, University of North Carolina School of Medicine, Chapel Hill, NC); Kenneth W. Kizer, MD, MPH (President and CEO, National Quality Forum, Washington, DC); Michael L. LeFevre, MD, MSPH (Professor, Department of Family and Community Medicine, University of Missouri School of Medicine, Columbia, MO); Carol Loveland-Cherry, PhD, RN (Executive Associate Dean, Office of Academic Affairs, University of Michigan School of Nursing, Ann Arbor, MI); Lucy N. Marion, PhD, RN (Dean and Professor, School of Nursing, Medical College of Georgia, Augusta, GA); Virginia A. Moyer, MD, MPH

(Professor, Department of Pediatrics, University of Texas Health Science Center, Houston, TX); Judith K. Ockene, PhD (Professor of Medicine and Chief of Division of Preventive and Behavioral Medicine, University of Massachusetts Medical School, Worcester, MA); George F. Sawaya, MD (Associate Professor, Department of Obstetrics, Gynecology, and Reproductive Sciences and Department of Epidemiology and Biostatistics, University of California, San Francisco, CA); Albert L. Siu, MD, MSPH (Professor and Chairman, Brookdale Department of Geriatrics and Adult Development, Mount Sinai Medical Center, New York, NY); Steven M. Teutsch, MD, MPH (Executive Director, Outcomes Research and Management, Merck & Company, Inc., West Point, PA); and Barbara P. Yawn, MD, MSc (Director of Research, Olmstead Research Center, Rochester, MN)

**Members of the Task Force at the time this recommendation was finalized. For a list of current Task Force members, go to* www.ahrq.gov/clinic/uspstfab.htm.

FINANCIAL DISCLOSURES/CONFLICTS OF INTEREST

The U.S. Preventive Services Task Force has an explicit policy concerning conflict of interest. All members disclose at each meeting if they have an important financial conflict for each topic being discussed. Task Force members with conflicts can participate in discussions about evidence, but members abstain from voting on recommendations about the topic in question.

From: Harris RP, Helfand M, Woolf SH, Lohr KN, Mulrow, CD, Teutsch SM, Atkins D. Current methods of the U.S. Preventive Services Task Force: a review of the process. Methods Work Group, Third U.S. Preventive Services Task Force. Am J Prev Med 2001 Apr;20(3S):21-35.

GUIDELINE STATUS

This is the current release of the guideline.

It updates a previously published guideline summary: U.S. Preventive Services Task Force. Guide to clinical preventive services. 2nd ed. Baltimore (MD): Williams & Wilkins; 1996. Chapter 23, Screening for elevated lead levels in childhood and pregnancy. p. 247-67.

GUIDELINE AVAILABILITY

Electronic copies: Available from the U.S. Preventive Services Task Force (USPSTF) Web site.

Print copies: Available from the Agency for Healthcare Research and Quality (AHRQ) Publications Clearinghouse. For more information, go to http://www.ahrq.gov/news/pubsix.htm or call 1-800-358-9295 (U.S. only).

AVAILABILITY OF COMPANION DOCUMENTS

The following are available:

Evidence Reviews:

- Rischitelli G, Nygren P, Bougatsos C, Freeman M, Helfand M. Screening for elevated lead levels in childhood and pregnancy. Update of 1996 USPSTF Review. Rockville (MD): Agency for Healthcare Research and Quality (AHRQ), 2005 Nov 4. 125 p. Electronic copies: Available in Portable Document Format (PDF) from the U.S. Preventive Services Task Force (USPSTF) Web site.
- Rischitelli G, Nygren P, Bougatsos C, Freeman M, Helfand M. Screening for elevated lead levels in childhood and pregnancy. An updated summary of evidence for the U.S. Preventive Services Task Force. Rockville (MD): Agency for Healthcare Research and Quality (AHRQ), 2005. 87 p. Electronic copies: Available in PDF from the U.S. Preventive Services Task Force (USPSTF) Web site.

Background Articles:

- Woolf SH, Atkins D. The evolving role of prevention in health care: contributions of the U.S. Preventive Services Task Force. Am J Prev Med 2001 Apr;20(3S):13-20.
- Harris RP, Helfand M, Woolf SH, Lohr KN, Mulrow, CD, Teutsch SM, Atkins D. Current methods of the U.S. Preventive Services Task Force: a review of the process. Methods Work Group, Third U.S. Preventive Services Task Force. Am J Prev Med 2001 Apr;20(3S):21-35.
- Saha S, Hoerger TJ, Pignone MP, Teutsch SM, Helfand M, Mandelblatt JS. The art and science of incorporating cost effectiveness into evidence-based recommendations for clinical preventive services. Cost Work Group of the Third U.S. Preventive Services Task Force. Am J Prev Med 2001 Apr;20(3S):36-43.

Electronic copies: Available from U.S. Preventive Services Task Force (USPSTF) Web site.

The following is also available:

- The guide to clinical preventive services, 2006. Recommendations of the U.S. Preventive Services Task Force. Rockville (MD): Agency for Healthcare Research and Quality (AHRQ), 2006. 228 p. Electronic copies available from the AHRQ Web site.
- A step-by-step guide to delivering clinical preventive services: a systems approach. Rockville (MD): Agency for Healthcare Research and Quality (AHRQ), 2002 May. 189 p. Electronic copies available from the AHRQ Web site. See the related QualityTool summary on the Health Care Innovations Exchange Web site.

Print copies: Available from the Agency for Healthcare Research and Quality Publications Clearinghouse. For more information, go to http://www.ahrq.gov/news/pubsix.htm or call 1-800-358-9295 (U.S. only).

The Electronic Preventive Services Selector (ePSS), available as a PDA application and a web-based tool, is a quick hands-on tool designed to help primary care clinicians identify the screening, counseling, and preventive medication services that are appropriate for their patients. It is based on current recommendations of the USPSTF and can be searched by specific patient characteristics, such as age, sex, and selected behavioral risk factors.

PATIENT RESOURCES

The following is available:

- The Pocket Guide to Good Health for Adults. Rockville (MD): Agency for Healthcare Research and Quality (AHRQ); 2003.

Electronic copies: Available from the U.S. Preventive Services Task Force (USPSTF) Web site. Copies also available in Spanish from the USPSTF Web site.

Print copies: Available from the Agency for Healthcare Research and Quality (AHRQ) Publications Clearinghouse. For more information, go to http://www.ahrq.gov/news/pubsix.htm or call 1-800-358-9295 (U.S. only).

Please note: This patient information is intended to provide health professionals with information to share with their patients to help them better understand their health and their diagnosed disorders. By providing access to this patient information, it is not the intention of NGC to provide specific medical advice for particular patients. Rather we urge patients and their representatives to review this material and then to consult with a licensed health professional for evaluation of treatment options suitable for them as well as for diagnosis and answers to their personal medical questions. This patient information has been derived and prepared from a guideline for health care professionals included on NGC by the authors or publishers of that original guideline. The patient information is not reviewed by NGC to establish whether or not it accurately reflects the original guideline's content.

NGC STATUS

This summary was completed by ECRI on June 30, 1998. The information was verified by the guideline developer on December 1, 1998. This NGC summary was updated by ECRI on January 17, 2007. The updated information was verified by the guideline developer on January 26, 2007.

COPYRIGHT STATEMENT

DISCLAIMER

NGC DISCLAIMER

The National Guideline Clearinghouse™ (NGC) does not develop, produce, approve, or endorse the guidelines represented on this site.

All guidelines summarized by NGC and hosted on our site are produced under the auspices of medical specialty societies, relevant professional associations, public or private organizations, other government agencies, health care organizations or plans, and similar entities.

Guidelines represented on the NGC Web site are submitted by guideline developers, and are screened solely to determine that they meet the NGC Inclusion Criteria which may be found at http://www.guideline.gov/about/inclusion.aspx .

NGC, AHRQ, and its contractor ECRI Institute make no warranties concerning the content or clinical efficacy or effectiveness of the clinical practice guidelines and related materials represented on this site. Moreover, the views and opinions of developers or authors of guidelines represented on this site do not necessarily state or reflect those of NGC, AHRQ, or its contractor ECRI Institute, and inclusion or hosting of guidelines in NGC may not be used for advertising or commercial endorsement purposes.

Readers with questions regarding guideline content are directed to contact the guideline developer.

Date Modified: 9/29/2008